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and parallel with each other, are so perfect as to produce the effect of a regularly fluted column wrought with a chisel. In some parts of these grooves, there are carbonized remains of the original plant. It is otherwise a perfectly silicified fossil of a grayish-white color. Mr. Lyell, who has visited the spot (South Joggins) from which the specimen came, has satisfactorily determined that the strata of sandstone, in which the *Sigillaria* and other coal fossils of Nova Scotia are found, form altogether a mass of 2,500 feet in thickness. As these fossils are dispersed through every part of this immense mass, at the lowest depth as well as near its surface, Sir Charles Lyell concludes that many forests which grew here must have been successively submerged, and changed to the condition in which we now find them. The fossil trees are in an erect position, and perpendicular to the planes of stratification of the sandstone; but as this rock is now inclined at an angle of twenty-four degrees, we have proof of its subsidence or change of position.*

Three hundred and forty-sixth meeting.

April 15, 1851. — SEMI-MONTHLY MEETING.

The PRESIDENT in the chair.

Professor Peirce presented a paper on Saturn's rings, by Mr. George P. Bond, in which the latter gentleman has carefully investigated the structure of those rings, and arrived at the result, that they are fluid, and variable in number. Professor Peirce also stated, as some of the results of his own researches upon the same subject, that no ring can exist around a planet which has not satellites; that a ring surrounding such a planet would fall into it; and that a fluid ring surrounding Saturn might at the maximum become subdivided into twenty rings.

Professor Agassiz communicated some new views upon the special homologies of Echinoderms; and pointed out, at considerable length, homologies in the structure of several speci-

* See Lyell on American coal plants, in his *Travels in North America*, Vol. II. p. 159.

mens which he exhibited to the Academy. He also, in reply to inquiries proposed by Professor Henry B. Rogers, stated the result of his observations in regard to the different depths inhabited by Echinoderms in the ocean.

Three hundred and forty-seventh meeting.

May 6, 1851. — MONTHLY MEETING.

The **PRESIDENT** in the chair.

Mr. Everett read a part of a letter from Sir John Herschel, expressing a high opinion of the power of the astronomical telescope belonging to the Cambridge Observatory, and of Mr. Bond as a skilful observer; and ascribing to him priority in the discovery of the new ring of Saturn.

Mr. Guyot gave an account of some recent discoveries relating to the geography of the interior of Africa, and expressed his views at considerable length in regard to the general configuration of the African continent. Remarks upon the same subject were made by the President, Mr. Everett, Judge Shaw, Professor Horsford, and Professor Caswell. Mr. Guyot presented to the Academy a pamphlet in the German language by C. Ritter, relating to the same matter.

Dr. W. F. Channing offered some remarks respecting Foucault's pendulum experiment, and suggested the idea of supporting the pendulum by magnetic attraction or upon an agate in an exhausted receiver, as a means of obviating the effects of friction and the resistance of the air.

Mr. J. H. Abbot communicated and explained the results of a new experiment in Hydraulics. He stated that, — while water flowing from a cistern through a straight, horizontal, cylindrical tube, escapes, if small lateral holes are made in it, through those holes in jets, contrary to a proposition laid down by Bossut, — the opposite effect takes place, if the end of the tube is made conically divergent, and small glass tubes descend from the holes into vessels containing water. In this case, water ascends and is discharged into the horizontal tube,